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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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			ART UNIT	PAPER NUMBER
			2193	

DATE MAILED: 10/19/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/801,602	AMERICA, PETRUS HUBERTUS MARIA	
	Examiner	Art Unit	
	Tuan A. Vu	2193	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 September 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-9, 11, 13, 14 and 16-18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☐ Claim(s) 1-9, 11, 13-14, and 16-18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|-----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. This action is responsive to the Applicant's response filed 9/15/2005.

As indicated in Applicant's response, claims 1, 2, 11, 13 have been amended, claim 12 canceled and claims 16-18 added. Claims 1-9, 11, 13-14, and 16-18 are pending in the office action.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-5, 8-9, 11, 13-14, and 16-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Regnell et al., "From Requirements to Design with Use Cases", *3rd Intl Workshop on Requirements Engineering – Proceeding CAISE '97*, June 1997 (hereinafter Regnell), in view of Don Heim, "Requirements Management with Use Cases" Software Technology Conference, May 1999 (hereinafter Heim).

As per claim 1, Regnell discloses a method for simultaneously developing a family of complex systems including a plurality of complex systems (*market, countries, standards* - pg. 2, ch. 2: Context – Note: complex systems including more than one plurality of such systems based on market, country or standard reads on family of plurality of systems)having a common software architecture platform, the method comprising:

forming a requirements object model (ROM) which explains the abstract concepts in terms of structured vocabulary (e.g. Fig. 1, pg. 5 - Note: abstract symbols of Tool for

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representing graphically a use case reads on interaction in terms of abstract concepts from a structured vocabulary; *C11, C12 ... C14, Component Model* - Fig. 2, pg. 5; *MSC, Pseudo code* – last para, pg. 5);

developing the use cases based on the set of requirements object model (e.g. Fig. 2, 3, pg. 5, 6 and related text) such that the use cases are expressed using the structured vocabulary of the requirements object model (e.g. Use Case Model: *Textual description of the use cases U1, U2, U* – Fig. 1);

the use cases describing interaction of users with each of the complex systems in terms of the structured vocabulary explaining the abstract concepts(e.g. Fig. 3; Use Case Model: *textual descriptions U1, U2, U3* – Fig. 1);

forming functional requirements specification (FRS) which includes use cases (e.g. *Functionality Specification* - Fig. 1, pg. 5)

But Regnell does not explicitly disclose constructing an initial requirement object model (ROM), an initial set of use cases, a initial FRS; and forming an amended ROM, forming additional use cases based on the amended ROM; changing the FRS simultaneously with the additional use cases, repeating formation of additional use cases, amended FRS and ROM until desired use cases have been formed and considered; and obtaining a final ROM once all the desired use cases have been considered.

Making iterative adjustment to graphical representation, model representation data (or use case scenarios) like those disclosed by Regnell in order to abstracting or implementing the functions as required by design/logical model/specifications (or FRS) so to improve the system via such mapping and readjustment of said scenarios was a known concept at the time the

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invention was made because, according to known practice at the time the invention was made, it is much preferred to spend resources up front than to ensue rectifying actions and its costly consequences when the product is finalized and in use. Accordingly, Regnell discloses how to evolve a design from existing stages using evolution and incremental approach via which the consolidation of a component specification via a functional distribution model by Regnell using further validation and traceability activities as well as multiple incremental projects (see Regnell, pg. 6-8; *three increments* - pg. 9 ch. 5.1; *Evolution, Incremental development* – pg. 2); and that already entails the need for improving as much as possible during the requirements and pre-design stage. Because a use case is a symbolic mirror of a set of functional requirement, the amending of the requirement object model along with the amendment of use case scenarios from Regnell would have been strongly suggested if not implicitly disclosed. The incremental improvement to a model and prototype in complex system with of use cases to effect change to a requirement model is evidenced in Heim's teachings. Heim, in a method to capture requirements for an information system related to a Patient-Record Military Health System using Use Cases analogous to Regnell's, discloses requirement capture using use cases and incremental changes via iteration of scenarios involving creating model and use cases until a suitable prototype can be tested (e.g. pg. 8), i.e. a change in a use case leading to change to its description using a specific structural vocabulary as implemented by the CASE-tool. In case Regnell does not provide successive amending of the ROM simultaneously with developing use cases and further repeating the cycle ROM change followed by Use Case changes reflecting the changed ROM until a fine-tuned ROM is achieved, then it would have been obvious for one of ordinary skill in the art at the time the invention was made to implement the ROM by Regnell in light of the

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incremental approach by Heim, i.e. generating an initial set of FR or use cases, then make incremental change to the ROM, use cases and FR, with upgrading ROM, Use cases, and FR in response to each increment until a final ROM is achieved. Because each use case represents an aspect among more complex business patterns or required functionalities of complex families of business logic and making incremental improvement to the requirement model in conjunction with new use cases adjustments (changes being imparted to the corresponding description using a specific structural vocabulary) the final, one skill in the art would be motivated to do the above improvement to Regnell's incremental approach using Heim's teaching because this would increase the chance of weeding out imperfection at the requirements stage in the functional model approach by Regnell and according to well-known concept of software development, alleviate costly drawbacks during later stages of the software lifecycle just as in the traceability costs analysis emphasized by Heim or suggested by Regnell.

As per claim 2, Regnell discloses complex business system and a plurality of developed subprojects with coordination of teams aimed as perfecting a model design or models (- pg. 9 ch. 5.1) and management of the hierarchy of components related to use cases (e.g. pg. 6-7); hence has suggested establishment/organization into teams responsible for requirements and design; modeling/validating and for constructing scenarios mapping each assigned section of the complex system subcomponents or chapters of a master FRS document.

Official notice is taken that managing a large software project using developing teams with overlapping responsibilities (members of team being used in other teams), from requirement analysis, authoring, to design evaluation, implementation, test scenarios and verification, change reviews and traceability analysis, was a well-known concept at the time the

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invention was made. Collaborations between use cases being specified by different authors are known in tools like Rational Rose or the likes, thus suggesting overlapping and integrating of separately authored Use cases as suggested by Regnell (see *development team* -pg. 9 ch. 5.1, *work parallelization* – ch. 5.2, pg. 10) or Heim (see Heim: pg. 8-14). Hence, in case Regnell does not provide overlapping teams for authoring requirement specification and modeling of such requirements and for handling specific ones of the chapters, it would have been obvious for one of ordinary skill in the art at the time the invention was made to provide teams for modeling and for authoring requirements so that members of modeling (e.g. object model control team) teams cooperate with members of the requirement authoring team as taught by common practice as mentioned above. The motivation would be to enable repartition of resource/responsibilities and specialization of domain knowledge as well as knowledge sharing; hence facilitate supervision and interdependency control and/or concurrent development conflict resolution; all of these concepts being integrated in to the common overlapping team concept as mentioned above.

As per claim 3, Regnell does not expressly disclose expressing differences in each family of complex system in a component model or plurality of models (see *market, countries, standards* - pg. 2, ch. 2) for each but via projects developed and integrated as from claim 2, the establishing of a model for each aspect of a family of complex systems would have been obvious because representing one model for a distinct aspect of a family of complex systems would enable specific resources to be allotted just to develop and identify the similitude, differences, weakness and strengths of what is to be implemented for such distinct member or aspect or model, hence increase efficiency, i.e. for the same rationale as mentioned in claim 2.

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As per claim 4, Regnell discloses initial model (Fig. 1, 2, 3) as specified in claim 1 but does not explicitly disclose constructing one from a team, performing the FRS authoring of use cases based upon that initial model and performing fine tuning of the use case and the object model.

But it is well evident that when the team, a limitation being obvious by virtue claims 2-3, tackles an aspect of the complex requirement system, the steps of

constructing an initial requirement object model (Note: creating a initial object model and populating changes herein is inherent to every software engineering and modeling),

authoring a use case therefor are disclosed as being implicit from the teachings recited in claim 1 (see Regnell: Fig. 1, pg. 5 ; Fig. 2, 3, pg. 5, 6 – Note: It is also noted that the use of Case Tool with Use Case for requirement analysis like Rational Rose was a known concept; and official notice is taken that authoring in a requirement building process in such tool implicitly discloses authoring and creating of model graphical representation; and in light of such Regnell has disclosed authoring and building of initial model); and

fine tuning of the use cases and refining the model would all have been obvious by virtue of claim 1.

As per claim 5, Regnell does not explicitly that authoring of use cases is carried out in parallel by respective requirement authoring teams. The concept of parallel developing of software and concurrent authoring of model specification by more than one developers in frameworks such as Regnell's using UML or Rationale Rose (Note: it is not perceivable to have a computer tool and many teams to support a complex system development as in Regnell's when every stage has to be done in a non-parallel or non-concurrent fashion) was a known concept in

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the art of using Unified Modeling Language or CASE Tools which has been designed for such concurrent use of users operating from separate and heterogeneous development environments. Hence, Regnell in combination with Heim as set forth in claim 1, has disclosed concurrent authoring Use Case in parallel of models by development team members.

As per claims 8 and 9, in conjunction with the rationale of claim 3 for getting a model per member of a family, one model for a complex system among family of models. Official notice is taken that subclass being derived from more general classes, multiplicities of relationships exists between classes in an model entity; and that model components be hierarchized by properties or attributes according to industrial nature a problem, a domain, a business logic or a system behavior, in OO modeling framework or Case Tools like that of Rational Rose was a well-known concept at the time the invention was made. Hence, in view of the teachings by Regnell from claim 1 and the rationale in claim 3, the limitation of expressing the differences between members of a family in the requirements model would have been obvious if not implicitly disclosed.

As per claim 11, Official notice is taken that in a software development, the analyzing of a requirement model or models to identify shortcomings and effecting corrective actions to improve such shortcomings are well-known concepts at the time the invention was made. The limitation of claim 11 would be implicitly disclosed in Regnell's (in combination with Heim's) complex software systems development in light of the validation and traceability tracing teachings as mentioned in claim 1.

As per claim 13, although there is no explicit disclosing from Regnell or Heim as to considering the FRS to be complete when all the use cases are expressed in the structure

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vocabulary of the final object model, this limitation is implicitly taught in Regnell or Heim's requirement fulfilling process (as per claim 11); because if one shortcomings is left unresolved in the scheme of requirement validation or verification, the product might not be viable or the purpose of the Requirement engineering process as intended by Regnell would be defeated.

As per claim 14, the limitation as to develop additional use cases simultaneously with requirement object models or ROMs has been addressed in claim 1; the limitation that the ROMs is thereby formed would also be disclosed based thereupon.

As per claim 16, see Regnell (Use Case Model: *Textual description of the use cases U1, U2, U3* – Fig. 1)

As per claim 17, the claim include the subject matter of claim 1 regarding amendment to the use cases and simultaneous adjustment to the requirement models; hence is rejected with the rationale as set forth in claim 1.

As per claim 18 (refer to Regnell: *Textual description of the use cases U1, U2, U3* – Fig. 1).

4. Claims 6 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Regnell et al., "From Requirements to Design with Use Cases", 3rd Intl Workwhop on Requirements Engineering – Proceeding CAISE '97, June 1997; and Heim, "Requirements Management with Use Cases" Software Technology Conference, May 1999; as applied in claim 1, and further in view of Langlotz, USPN: 6,366,683 (hereinafter Langlotz).

As per claim 6, Regnell discloses a complex system while Heim discloses that complex systems are medical or hospital related application system (pg. 3-4). In a system using modeling language similar to the Case Tool to specify an instance of medical application similar to the

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suggestion by Heim, Langlotz discloses the medical system is radiology-related and imaging system (Fig. 1-2). Since medical imaging is but one of many medical diagnostic or hospital applications, it would have been obvious for one of ordinary skill in the art at the time the invention was made to implement one of the business or medical system frameworks as suggested by Heim so that a medical imaging or any medical diagnostic application using modeling as taught by Langlotz be one of such frameworks, because of the relationships among information data as depicted by Langlotz's medical radiology imaging system would be more enhanced for better analysis and reusability when modeling is used.

As per claim 7, this claim recites the medical imaging limitation of claim 6 in conjunction with inter-cooperating teams performing chapters or subsets of the complex FRS as addressed in claims 3-5; hence would have been obvious for the same reasons as used in claims 6, and 3-5 respectively.

Response to Arguments

5. Applicant's arguments filed 9/15/05 have been fully considered but they are not persuasive. Following are Examiners' remarks.

(A) Applicant has submitted that Regnell via the Office Action citing Fig. 1 and 2 (with oval and lines between actors and Use cases) does not teach or even suggest providing a requirements object model including a structured vocabulary to express use cases and which is designed to be amended simultaneously with formation of use cases (Appl. Rmrks, pg. 12, 2nd para; pg. 13, top para).

First, as to the structured vocabulary to express use cases, the rejection has reasonably map such limitation with the *textual description* of the use cases U1, U2, U3 from Fig. 1 by

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Regnell in light of the requirements as shown therein. The claim does not make it very clear as to how this structured vocabulary necessarily amounts to in terms of being structured in a particular format in order to preclude the use of textual format description as propounded in the Office Action as shown above. Applicant's arguments fail to comply with 37 CFR 1.111(b) because they amount to a general allegation that the claims define a patentable invention without specifically pointing out how the language of the claims patentably distinguishes them from the references.

Second, as to the arguments mentioning about 'to be amended simultaneous with ... formation of use cases', following is, in the most part, a repeat of Examiner's observation from the previous office action.

The use of Case tools to produce dynamically a plurality of use cases based on the perceived set of requirements does not stop at a one time implementing use cases strictly in conjunction with a static and unchanging set of requirements. Software change due to change to requirement for a plurality of reasons was a integral part of complex systems development; and Regnell system is not an exception to being subjected to continual demand for changes, one of which due to requirement changes or flaw in the designed system demanding recursive adjust to the requirement gathering stage. The rejection has pointed to parts of Regnell where incremental adjustments to specifications or use cases are prone to happen; and that *Evolution, Incremental development* (see pg. 2) are part of the lifecycle of any product, i.e. it would be pointless to provide an incremental or evolutionary adjust to a requirement model in a framework just by being locked with one static and non-improving requirement-capturing model, which is not what is derived from reading Regnell. Heim further has been brought in to evidence via iteration of

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scenarios. Thus it is understood that in order for incremental and iterative improvement be made to obtain a final copy of the requirement model, the steps recited as creating a initial ROM, Use case set, FRS and repeating adding of upgraded ROM, Use Cases or FRS, would be perceived as being integral to Heim's incremental process. Hence, the combination of Regnell and Heim has met the teachings from the claim as interpreted by one skill in the art based on broad and reasonable construction of the claim language. Hence, the argument that a change of a model be simultaneous with a adjustment in the Use case seemingly is not convincing because a requirement model and an use case go hand in hand by the very concept of having a Use case tool to represent an aspect of a requirement set (see B in regard to reference Terry Quatrani as below).

(B) Applicant has submitted that in Regnell's graphical representations there is no mention of amending these representations simultaneous with the formation of use cases (Appl. Rmrks, pg. 13, 3rd para) and that Heim does not teach 'formation of amended requirements object models which express concepts in terms of structured vocabulary and which are based on use cases (Appl. Rmrks, pg. 13, bottom, pg. 14, top para). The rationale to combine Regnell to Heim has NOT been purported to overcome structured vocabulary expression of use cases. Applicant fail to clearly defeat the grounds of the USC 103(a) rationale -for obviousness-- just by asserting a alleged lack of a particular feature not being the focal point of said rejection. In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). Section A above has addressed the Applicants concern about

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the change in structured vocabulary in conjunction with amended use cases and simultaneous change to the requirement model in relation to the additional change thereof. Reinforcing the well-known concept that UML use cases are made to mirror change in requirements, the action again refers to some section in the previously provided reference by Terry Quatrani. In other words, the excerpt of Use Cases tool by Terry Quatrani (*Visual Modeling with Rational Rose and UML*, 1998) shows that changes to any set of requirements, no matter how small, is always and immediately mirrored in the Use case view with corresponding changes to the Use case instance (see Quatrani pg. 157-177); and this attests to the otherwise inherent aspect of the parallel mapping of use case(s) and requirement specifics during a given iterative development stage as mentioned in Heim's (or Regnell's) modeling tool; that is, a functional requirement change needs to be reflected via adjustments to Use case scenario/instance in order to provide an incremental and evolutionary form of improvement towards the final set of requirements, i.e. a better product release. A rationale for obvious teaching can take into consideration the extent of the prior art, the scope/state of useful arts commensurate with the claimed invention, the level of one skill in the art at the time the invention was made, and *inter alia*, the well known concept or otherwise inherent teachings based on the above. The parallel adjusting of Use cases and the FR model (from which the use cases are instantiated) is deemed integral and virtual inherent to any Use case processing or requirement model framework when such framework is purported to consolidate a final model after incremental changes or evolutionary improvements as exemplified by Regnell or Heim. Besides, the rejection is a combination of two teachings and Applicant has failed to show why the rationale to combine as set forth in the rejection has been inappropriate. In response to Applicant picking on each reference taken alone, one cannot show

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nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

For the above reasons, the claims stand rejected as set forth in the Office Action.

Conclusion

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tuan A Vu whose telephone number is (272) 272-3735. The examiner can normally be reached on 8AM-4:30PM/Mon-Fri.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kakali Chaki can be reached on (571)272-3719.

The fax phone number for the organization where this application or proceeding is assigned is (571) 273-3735 (for non-official correspondence – please consult Examiner before using) or 571-273-8300 (for official correspondence) or redirected to customer service at 571-272-3609.

Any inquiry of a general nature or relating to the status of this application should be directed to the TC 2100 Group receptionist: 571-272-2100.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


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VAT

October 11, 2005


KAKALI CHAKI
SUPERVISORY PATENT
TECHNOLOGY CENTER